

## SEVERE LOCAL STORMS, MAY, 1928—Continued

| Place                                       | Date | Time        | Width of path, yards | Loss of life | Value of property destroyed | Character of storm      | Remarks   | Authority                       |
|---|------|-------------|----------------------|--------------|-----------------------------|-------------------------|---|---------------------------------|
| Fairfield, Tex.....                         | 28   | 5:30 p. m.  | -----                | -----        | 1,000                       | Probably small tornado. | Minor damage to buildings.....  | Official, U. S. Weather Bureau. |
| Booker, Tex.....                            | 28   | -----       | 1,320                | -----        | 40,000                      | Hail.....               | Crops damaged; path 10 miles.....   | Do.                             |
| Hondo, Tex.....                             | 29   | 4 a. m.     | 1,760                | -----        | 2,000                       | do.....                 | Crops badly damaged over short path.....                                    | Do.                             |
| Kettle Falls, Wash. (near).....             | 29   | 10:30 a. m. | -----                | -----        | -----                       | do.....                 | Orchards and gardens considerably injured.....                              | Do.                             |
| Greensboro, Fla.....                        | 29   | 3 p. m.     | -----                | -----        | 5,800                       | do.....                 | Crops injured.....  | Do.                             |
| Danbury, Nebr.....                          | 30   | 6 p. m.     | -----                | -----        | -----                       | Hail and wind.....      | Partial to total loss of crops; some buildings damaged.....                 | Do.                             |
| Red Willow and Frontier Counties, Nebr..... | 30   | do.....     | 3 miles.....         | -----        | -----                       | do.....                 | Crops damaged from 85 to 100 per cent in places.....                        | Do.                             |
| Humphrey, Nebr. (near).....                 | 30   | -----       | -----                | -----        | -----                       | Small tornado.....      | Crops and farm buildings damaged.....                                       | Kansas City Times (Mo.).        |
| Kansas City, Mo., and vicinity.....         | 30   | P. m.       | -----                | -----        | -----                       | Thunderstorm.....       | Considerable damage to trees, buildings, etc.; several persons injured..... | Official, U. S. Weather Bureau. |
| Raymondsville, Tex., and vicinity.....      | 31   | 2:30 p. m.  | 3,520                | -----        | 500,000                     | Hail.....               | Severe damage to buildings and crops over a path 15 miles long.....         | Do.                             |
| Cherokee, Okla. (near).....                 | 31   | 6 p. m.     | -----                | -----        | -----                       | do.....                 | Severe property and crop loss.....  | Do.                             |

## RIVERS AND FLOODS

By R. E. SPENCER

Reports received too late for inclusion in the April REVIEW give the following additional figures pertaining to the floods of late April and early May in the Atlantic and West Gulf drainages:

| Losses  | Raleigh, N. C., district (rivers of North Carolina) | Mobile, Ala., district (Black Warrior and Tombigbee Rivers) |
|---|---|---|
| Tangible property (buildings, bridges, highways, etc.).....     | \$2,500   | \$55,900  |
| Matured crops.....  | -----   | 2,400   |
| Prospective crops.....  | 5,000   | 105,500   |
| Livestock and other movable property.....                       | -----   | 19,600  |
| Suspension of business.....                                     | 5,000   | 70,800  |
| Savings accomplished through Weather Bureau flood warnings..... | 15,000  | 255,700   |

In the Tombigbee-Black Warrior drainage, where lowlands were inundated to as much as 6 miles from the river banks in some localities, the flood proved of distinct value to lumber interests as a means of removing logs from swamp lands, the warnings affording sufficient time for preparations for the work. It is estimated that 14,000,000 feet of timber were floated out from the lowlands of the four counties nearest the mouth of the Tombigbee River.

The river service in Maine was reestablished recently under the supervision of the Weather Bureau Office at Portland, Me., after several years of inactivity. Owing to the rapidity of run-off and the comparative shortness of the streams in Maine, and to the consequence that rises generally occur while causative rains are still in progress, the river forecaster is required to estimate intensities of expected rainfalls. The method in use at Portland of course attempts nothing more definite than to predict these intensities as light, moderate, or heavy; but, with this general classification used as a key during a period of moderate flood conditions in Maine toward the end of May, the service proved quite equal to the demands made upon it. No damage occurred, and expressions of appreciation for the service—particularly from water power companies operating dams for the control of run-off—were numerous.

Other May rises in the Atlantic and East Gulf drainages were of little importance.

The consequences of the rises in the Yazoo Basin and the Atchafalaya and lower Mississippi Rivers were of no

great importance. In the Tallahatchie and Yazoo Basins the combined overflow covered not more than 1,000 square miles, about one-fifth of which was under cultivation; but the land was replanted immediately upon the recession of the flood, so that the only actual loss was in seed and labor. In St. Martin Parish, La., over flow from the Atchafalaya also covered lowlands that had been planted to crops, but no estimate of the damage was received.

In the Shreveport, La., district, flood stages were passed in the Sulphur and Cypress Rivers, and damage estimated at \$30,000 was done. Of this, \$20,000 was to highways and railroad property, and \$10,000 to crops.

On the Rio Grande no damage is reported at any point except in the vicinity of the city of Riógrande, Tex., where the rise, combined with concurrent heavy rainfall, damaged highways, culverts, and prospective and matured crops to the amount of about \$75,000. As a result of Weather Bureau warnings, \$5,000 worth of property was saved at Riógrande and extensive protective measures, reported to have saved many thousands of dollars, were taken at downstream points.

No damage is reported as a result of floods in the Denver, Colo., district; and the Columbia River rise which continued after the close of the month, will be discussed in the June number of the REVIEW.

| River and station                            | Flood stage | Above flood stages—dates |     | Crest     |                        |
|--|-------------|--------------------------|-----|-----------|------------------------|
|  |             | From—                    | To— | Stage     | Date                   |
| ATLANTIC DRAINAGE                            |             |                          |     |           |                        |
| Susquehanna: Wilkes Barre, Pa.....           | Feet 20     | 1                        | 2   | Feet 20.0 | May 1-2.               |
| Potomac:                                     |             |                          |     |           |                        |
| Cumberland, Md.....                          | 8           | (1)                      | 1   | 10.4      | May 1.                 |
| Harpers Ferry, W. Va.....                    | 18          | 2                        | 2   | 18.9      | May 2.                 |
| Roanoke: Weldon, N. C.....                   | 30          | (1)                      | 2   | 39.2      | Apr. 29.               |
| Tar: Rocky Mount, N. C.....                  | 9           | 2                        | 2   | 9.6       | May 2.                 |
| Neuse:                                       |             |                          |     |           |                        |
| Neuse, N. C.....                             | 15          | (1)                      | 3   | 19.3      | Apr. 30.               |
| Smithfield, N. C.....                        | 14          | (1)                      | 4   | 18.0      | May 3.                 |
| Cape Fear:                                   |             |                          |     |           |                        |
| Fayetteville, N. C.....                      | 35          | (1)                      | 1   | 44.4      | Apr. 29.               |
| Elizabethtown, N. C.....                     | 22          | (1)                      | 3   | 31.2      | May 1.                 |
| Peedee: Mars Bluff, S. C.....                | 17          | (1)                      | 7   | 20.3      | May 4.                 |
|  |             | 10                       | 15  | 19.0      | May 13.                |
|  |             | 26                       | 28  | 17.6      | May 28.                |
| Santee:                                      |             |                          |     |           |                        |
| Rimini, S. C.....                            | 12          | (1)                      | 24  | 15.4      | Apr. 16.               |
|  |             | 27                       | (2) | 14.1      | May 30.                |
| Ferguson, S. C.....                          | 12          | (1)                      | 21  | 13.5      | Apr. 28-29 and May 15. |
| Broad: Blairs, S. C.....                     | 15          | 25                       | (2) | 13.4      | May 30.                |
|  |             | 9                        | 9   | 15.3      | May 9.                 |
|  |             | 24                       | 24  | 15.0      | May 24.                |
| Saluda:                                      |             |                          |     |           |                        |
| Chappells, S. C.....                         | 14          | 8                        | 10  | 17.4      | May 9.                 |
|  |             | 24                       | 25  | 17.2      | May 25.                |
| Three Mile Post, C. N. & L. R. R., S. C..... | 7           | 24                       | 25  | 8.2       | May 24.                |

Continued from last month.

\* Continued at end of month.

| River and station                         | Flood stage | Above flood stages—dates |     | Crest |                 |
|---|-------------|--------------------------|-----|-------|-----------------|
|   |             | From—                    | To— | Stage | Date            |
| ATLANTIC DRAINAGE—continued               |             |                          |     |       |                 |
| Altamaha:                                 | Feet        |                          |     | Feet  |                 |
| Charlotte, Ga.                            | 15          | (1)                      | 8   | 21.2  | Apr. 26.        |
| Everett City, Ga.                         | 10          | (1)                      | 15  | 12.5  | May 2-4.        |
| Ocmulgee:                                 |             |                          |     |       |                 |
| Abbeville, Ga.                            | 11          | (1)                      | 4   | 14.9  | Apr. 29.        |
| Lumber City, Ga.                          | 15          | (1)                      | 4   | 17.9  | Apr. 25.        |
| EAST GULF DRAINAGE                        |             |                          |     |       |                 |
| Apalachicola:                             |             |                          |     |       |                 |
| River Junction, Fla.                      | 18          | (1)                      | 3   | 26.6  | Apr. 27.        |
| Blountstown, Fla.                         | 20          | (1)                      | 5   | 24.6  | Apr. 28.        |
| Flint:                                    |             |                          |     |       |                 |
| Albany, Ga.                               | 20          | (1)                      | 2   | 29.3  | Apr. 24.        |
| Bainbridge, Ga.                           | 25          | (1)                      | 4   | 32.7  | Apr. 27.        |
| Alabama: Selma, Ala.                      | 35          | (1)                      | (9) | 48.0  | Apr. 27.        |
| Etowah: Canton, Ga.                       | 11          | 24                       | 24  | 15.6  | May 24.         |
| Tombigbee: Look 4, Demopolis, Ala.        | 39          | (1)                      | 10  | 61.2  | May 1.          |
| Pearl:                                    |             |                          |     |       |                 |
| Jackson, Miss.                            | 20          | (1)                      | 8   | 29.8  | Apr. 30.        |
| Columbia, Miss.                           | 18          | (1)                      | 3   | 22.9  | Apr. 25.        |
| West Pearl: Pearl River, La.              | 13          | (1)                      | 28  | 16.0  | Apr. 28.        |
| MISSISSIPPI DRAINAGE                      |             |                          |     |       |                 |
| Stony Creek: Johnstown, Pa.               | 10          | (1)                      | 1   | 13.0  | Apr. 30.        |
| Monongahela:                              |             |                          |     |       |                 |
| Look 7, Greensboro, Pa.                   | 30          | 1                        | 1   | 33.3  | May 1.          |
| Look 4, Pa.                               | 31          | 1                        | 1   | 32.5  | Do.             |
| Youghiogheny: Confluence, Pa.             | 10          | (1)                      | 1   | 11.0  | Apr. 30.        |
| Tippecanoe: Norway, Ind.                  | 6           | 7                        | 10  | 6.0   | May 7-10        |
| Big Pigeon: Newport, Tenn.                | 6           | 8                        | 8   | 6.8   | May 8.          |
| Mississippi:                              |             |                          |     |       |                 |
| Arkansas City, Ark.                       | 48          | 2                        | 11  | 49.2  | May 6-7.        |
| Vicksburg, Miss.                          | 45          | 3                        | 18  | 46.9  | May 11.         |
| Natchez, Miss.                            | 46          | 16                       | 16  | 46.0  | May 16.         |
| Baton Rouge, La.                          | 35          | 16                       | 16  | 35.0  | Do.             |
| Illinois: Beardstown, Ill.                | 14          | (1)                      | 1   | 16.0  | Apr. 16-18.     |
| St. Francis: St. Francis, Ark.            | 17          | (1)                      | 4   | 21.2  | Apr. 27.        |
| Arkansas: Yancopin, Ark.                  | 29          | (1)                      | 18  | 36.7  | May 3-4.        |
| White:                                    |             |                          |     |       |                 |
| Georgetown, Ark.                          | 22          | (1)                      | 9   | 28.2  | Apr. 28-29.     |
| DeValls Bluff, Ark.                       | 24          | (1)                      | 10  | 27.9  | Apr. 30-May 1.  |
| Clarendon, Ark.                           | 30          | (1)                      | 8   | 31.5  | May 3.          |
| Black:                                    |             |                          |     |       |                 |
| Corning, Ark.                             | 11          | (1)                      | 7   | 13.5  | Apr. 24-28.     |
|   |             | 26                       | 26  | 11.2  | May 26.         |
| Black Rock, Ark.                          | 14          | (1)                      | 9   | 24.9  | Apr. 22.        |
|   |             | 23                       | 23  | 14.3  | May 23.         |
| Cache: Patterson, Ark.                    | 9           | (1)                      | 3   | 9.6   | Apr. 27-29.     |
| Yazoo: Yazoo City, Miss.                  | 25          | 11                       | 25  | 26.0  | May 21.         |
| Tallahatchie: Swan Lake, Miss.            | 25          | (1)                      | 19  | 30.6  | May 3-4.        |
| Sulphur: Ringo Crossing, Tex.             | 20          | 17                       | 19  | 21.4  | May 17.         |
| Cypress: Jefferson, Tex.                  | 18          | 22                       | 24  | 19.8  | May 22.         |
| Atchafalaya: Melville, La.                | 37          | 15                       | 19  | 37.2  | May 15-17.      |
| WEST GULF DRAINAGE                        |             |                          |     |       |                 |
| Trinity: Dallas, Tex.                     | 25          | 18                       | 18  | 25.2  | May 18.         |
| Rio Grande:                               |             |                          |     |       |                 |
| San Marcial, N. Mex.                      | 3           | 3                        | 17  | 4.0   | May 5.          |
|   |             | 25                       | 25  | 3.1   | May 25.         |
|   |             | 28                       | (2) | 3.4   | May 31.         |
| Rio Grande, Tex.                          | 21          | 14                       | 14  | 23.8  | May 14.         |
| San Benito, Tex.                          | 23          | 15                       | 17  | 23.7  | May 16.         |
| Brownsville, Tex.                         | 18          | 17                       | 17  | 18.1  | May 17.         |
| PACIFIC DRAINAGE                          |             |                          |     |       |                 |
| Colorado:                                 |             |                          |     |       |                 |
| Grand Junction, Colo.                     | 11          | 29                       | (2) | 11.5  | May 31.         |
| Parker, Ariz.                             | 7           | 5                        | (2) | 10.5  | May 18, 19, 31. |
| Colorado, Roaring Fork: Carbondale, Colo. | 5           | 26                       | (2) | 6.1   | May 31.         |
| Eagle: Eagle, Colo.                       | 5           | 26                       | (2) | 6.0   | Do.             |
| Gunnison:                                 |             |                          |     |       |                 |
| Sapinero, Colo.                           | 19          | 29                       | (2) | 20.1  | Do.             |
| Delta, Colo.                              | 9           | 1                        | 14  | 11.0  | May 3.          |
|   |             | 23                       | (2) | 11.5  | May 31.         |
| Gunnison, North Fork: Paonia, Colo.       | 9           | 2                        | 3   | 9.6   | May 2.          |
|   |             | 7                        | 12  | 9.4   | May 10.         |
| Green: Elgin, Utah.                       | 12          | 13                       | 17  | 12.5  | May 15.         |
|   |             | 28                       | (2) | 13.0  | May 31.         |
| Columbia:                                 |             |                          |     |       |                 |
| Marcus, Wash.                             | 24          | 17                       | (2) | 34.2  | May 30-31.      |
| Umatilla, Oreg.                           | 25          | 28                       | 28  | 25.1  | May 28.         |
| The Dalles, Oreg.                         | 40          | 27                       | (2) | 42.1  | May 29.         |
| Vancouver, Wash.                          | 15          | 12                       | (2) | 25.4  | May 31.         |
| Kootenai: Bonners Ferry, Idaho.           | 26          | 19                       | (2) | 30.0  | May 28.         |
| Pend O'Relle: Newport, Wash.              | 16          | 17                       | (2) | 24.0  | May 31.         |
| Clearwater: Kamiah, Idaho.                | 14          | 8                        | 13  | 14.9  | May 9.          |
|   |             | 20                       | 27  | 15.7  | May 26.         |
| Willamette: Portland, Oreg.               | 15          | 12                       | (2) | 24.4  | May 31.         |

<sup>1</sup> Continued from last month.  
<sup>2</sup> Continued at end of month.

<sup>3</sup> Below flood stage at 8 a. m., May 1.  
<sup>4</sup> Estimated.

## MEAN LAKE LEVELS DURING MAY, 1928

BY UNITED STATES LAKE SURVEY

[Detroit, Mich., June 4, 1928]

The following data are reported in the Notice to Mariners of the above date:

| Data  | Lakes <sup>1</sup> |                    |             |             |
|---|--------------------|--------------------|-------------|-------------|
|   | Superior           | Michigan and Huron | Erie        | Ontario     |
| Mean level during May, 1928:  | <i>Feet</i>        | <i>Feet</i>        | <i>Feet</i> | <i>Feet</i> |
| Above mean sea level at New York.....                                     | 602.16             | 579.93             | 572.07      | 246.61      |
| Above or below—   |                    |                    |             |             |
| Mean stage of April, 1928.....  | +0.31              | +0.42              | +0.29       | +0.19       |
| Mean stage of May, 1927.....  | +0.28              | +0.77              | +0.11       | +0.66       |
| Average stage for May, last 10 years.....                                 | +0.57              | ±0.00              | -0.17       | +0.42       |
| Highest recorded May stage.....   | -0.89              | -3.59              | -2.35       | -2.34       |
| Lowest recorded May stage.....  | +1.98              | +1.77              | +0.90       | +1.65       |
| Average departure (since 1860) of the May level from the April level..... | +0.31              | +0.30              | +0.34       | +0.34       |

<sup>1</sup> Lake St. Clair's level: In May, 1928, 574.55 feet.

## EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, MAY, 1928

By J. B. KINEER

*General summary.*—The first decade of May had more favorable weather than had previously prevailed and farming operations made better advance. Less rainfall in the Southeast promoted better germination and growth, and in the Atlantic area, the Ohio Valley, and the Lake region the warmer weather was welcome and more activity in farm work and crop growth was noted. During the first part of the second decade cool weather retarded germination and growth in most sections east of the Mississippi River, but soil moisture was mostly sufficient. To the westward favorable conditions for agricultural activity and crop growth were experienced, but during the latter part of the period there was a need of moisture reported from parts of the northern Great Plains and the Northwest. During the last decade warmer weather was needed generally over most areas east of the Mississippi River and some parts needed rain, although there was generally ample soil moisture. Over the western two-thirds of the country conditions were generally very favorable in most central and southern sections where there was a fairly good supply of soil moisture, but in northern sections a good, general rain was needed over a large area from the upper Mississippi Valley and northwestern Lake region westward to the Pacific Ocean.

*Small grains.*—The weather was fairly favorable during the first decade in the eastern winter-wheat belt with some slight advance of the remaining crop, while with the warmer weather there was also some improvement indicated in the upper Mississippi Valley. In the Great Plains and westward to the foothills of the Rocky Mountains timely rains and moderate temperatures were of material benefit. During the second decade there was further generous rain in the Southwest and western portions of the belt and soil moisture was generally ample over most western parts. In the eastern portion there was little change noted. During the last decade the weather continued generally favorable over the western portion and some improvement was noted in